Vascular Anastomotic Clips Revisited

S.K. Kakkos*, I.A. Tsolakis

Department of Vascular Surgery, University of Patras Medical School, Patras 26 504, Greece

Nitinol and titanium vascular anastomotic clips were introduced in access surgery more than a decade ago. Compared to sutured anastomoses, clipped ones are performed faster, with fewer bleeding and infectious complications, while improved maturation, and better primary, and secondary patency of autogenous arteriovenous fistulas (AVFs) and prosthetic grafts have been reported in most studies. Improved outcomes might be the result of reduced neointimal hyperplasia (NIH) as shown in AVF and non-AVF models, improved anastomotic compliance, preservation of endothelial function, minimized endothelial/vessel wall trauma and reduced thrombosis potential, and perhaps bias due to slight differences in technique. Graft flow in clipped and sewn anastomoses has been reported to be the same.

In this issue Varcoe and coworkers demonstrated that in an ovine arteriovenous fistula model comparing nitinol U-clip with conventional anastomoses, NIH, expressed by the intimal-media area per unit length (IMA/L), was lower by 24% at 2 weeks, 32% at 4 weeks and 23% at 6 weeks (p < 0.001) in favor of the U-clips. Reduced NIH with titanium clips has been demonstrated by most studies; on the other hand, nitinol clips, tested in a coronary anastomosis model for NIH, which however was not quantified, had not been tested in a vascular access model in the past, despite successful clinical testing. Stenosis of an AVF anastomosis or at the arterial and/or venous anastomotic ends of a prosthetic graft is an important determinant of long-term access patency.

Future research should focus on the mechanisms underlying the improved outcome with anastomotic clips in an effort to improve further their design and composition, which could enhance further their clinical efficacy.

References

DOI of original article: 10.1016/j.ejvs.2011.11.017.
* Corresponding author. Tel.: +30 2613 603406; fax: +30 2613 603360.
E-mail addresses: kakkos@upatras.gr, s.kakkos@imperial.ac.uk (S.K. Kakkos).

1078-5884/$ — see front matter © 2011 European Society for Vascular Surgery. Published by Elsevier Ltd. All rights reserved. doi:10.1016/j.ejvs.2011.11.017